

## Reductions in Urban Outdoor Water Use as an Adaptation to Rising Temperatures and Declining Water Supplies in Southern California

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### Fact Sheet

#### The Issue

Water is a finite resource with many competing demands, including hydropower and power plant cooling. Increasing evidence shows that climate change will exacerbate water shortages in California. A large proportion of household water is used for outdoor landscaping and irrigation. A potential response to the predicted decrease in future water supplies is to promote changes in outdoor landscaping and irrigation to try to reduce water usage.

Many urban landscapes are over irrigated. There is a lack of data, however, on the water requirements of urban landscaping plants and the average rates of water loss through these plants.

#### Project Description

This project is creating a database of urban plant water usage consisting of both existing and new datasets for urban landscapes in the Los Angeles region. Satellite remote sensing imagery and a hydrologic model are being used to scale these datasets to rates of evaporation and transpiration (loss of water through plants) at the neighborhood, municipal, and landscape levels. Scenarios for changes in outdoor landscaping—such as large-scale conversions to xeriscapes (landscapes designed to minimize water use), climate-appropriate landscaping,



In urban landscapes, planting vegetation that is adapted to the local climate helps to conserve water.  
Image Credit: University of California, Agriculture and Natural Resources

and tree planting—are being used to evaluate both the effects on total outdoor water usage as well as the potential for reducing future water demand.

The research team is working with the Los Angeles Department of Water and Power to enhance their educational materials on the water needs of various types of landscaping, and on strategies for reducing outdoor irrigation. This project's overall objective is to obtain quantitative estimates on the potential to reduce urban water demand in Southern California, with large-scale changes in urban outdoor water usage as an adaptation to climate change.

The goals of this project are to:

- Determine the water demand of common landscape plants in Southern California.

- Determine the proportion of irrigation water transpired by plants in common types of landscapes.
- Determine how much the demand for water can be reduced through large-scale conversions to water-efficient landscapes under climate change scenarios.
- Determine how much these landscaping reductions will be offset by large-scale tree-planting programs.
- Determine if programs to encourage low-water landscapes are an effective adaptation to climate change.

## PIER Program Objectives and Anticipated Benefits for California

This study will provide a scientific basis for developing strategies for reducing urban water demand as an adaptation strategy in a changing climate. This research project is an important and necessary step in synthesizing crucial information on plant water-usage in urban landscapes so that government agencies and other interested parties in California may use this information for water conservation purposes.

California's water supplies may be severely impacted by future climate change. Because water is closely tied to energy production, implementing water conservation measures as an adaptation to climate change will help to reduce the associated impacts on energy demand and generation. This research will help to ensure that secure, stable, and reliable sources of energy can continue to be provided to California's residents.

## Project Specifics

Grant Agreement Number: PIR-08-005

Recipient: UC Irvine

City/County: Irvine, Orange County

Assembly District: 70

Senate District: 35

Application: Regional

Amount: \$199,737

Term: June 2009 to March 2012

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